



SPAWAR
Systems Center
San Diego

DATA LINK TEST TOOLS

Data Link Gateway



DATA LINK TOOLS FOR EXTENDING THE TADIL TESTING NETWORK

The Data Link Gateway (DLGW) system provides cost-effective Tactical Digital Information Link (TADIL) connectivity to multiple data link test facilities and host combat systems to facilitate TADIL integration and interoperability testing.

The extended testing network is accomplished by the placement of a DLGW system at each test site. The DLGW systems are networked over secure telephone lines or higher speed circuits, enabling a virtual Link-16 and/or Link-11 network.

The DLGW can emulate or interface to a wide range of Joint Tactical Information Distribution System (JTIDS) or Multifunctional Information Distribution System (MIDS) terminal types. The DLGW software provides a suite of functions that enables users to participate in data link exercises. When DLGW systems are interconnected, they form a network that can support up to 128 nodes, operating in any combination of those modes.

DLGW SYSTEM GOALS

Provide TADIL network connectivity to multiple data link test facilities and host combat systems.

- Extend communications environments to include a wider range of participants
- Facilitate interoperability testing and training

Provide tools to aid in the analysis, problem solving, and integration of host systems, terminals, and simulation equipment.

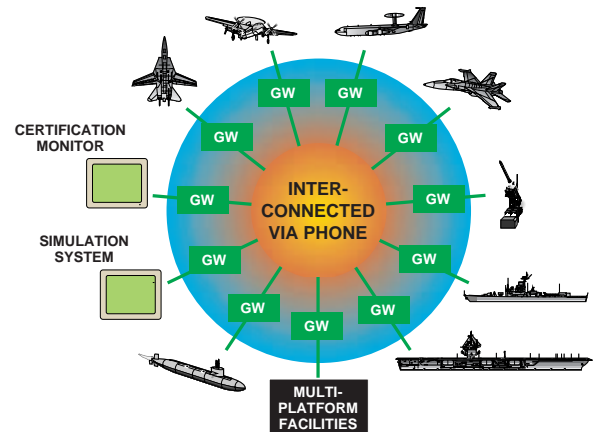
- Provide for distribution and delivery of scenario data
- Provide specialized interfaces and tools to accommodate specific user groups

APPLICATIONS

- Host development testing
- Interoperability testing
- System validation
- Connectivity for live testing
- Deployment testing
- Proof-of-concept testing
- On-line analysis
- Crew training
- Mission monitoring
- Mission evaluation
- Crew debrief
- Impact analysis
- Demonstrations

MAJOR USER GROUPS

- Theater Missile Defense System Exerciser (TMDSE)
- Distributed Engineering Plant (DEP)
- Joint Interoperability Test (JIT) Network
- Army Software Engineering Directorate (SED)
- Navy MIDS-Low Volume Terminal (LVT) Test & Evaluation Program
- Tactical Data Link Interoperability Testing Syndicate (TDLITS)



SYSTEM FEATURES

Can be configured to act as a Link-16 host system, as a data link terminal, as a virtual host and virtual terminal (in pairs), as a network monitor, or as a Link-16 and Link-11 DTS emulator.

Host emulation – allows multiple separate JTIDS networks to communicate in a coordinated network.

- Satisfies host interface
- Invisible host – TADIL information exchanged, but terminal controlled by DLGW host does not generate Precise Position Location and Identification (PPLI) message
- Initialization and status block tools
- Interface data extraction
- Specialized terminal load required – provided by JTIDS Network Library (JNL) build software

Terminal emulation – allows TADIL J capable systems to communicate without real terminals.

- Satisfies terminal interface in accordance with applicable Interface Control Document (ICD)
- Receipt compliance processing
- Data silent operation
- TADIL J message breakout
- Host message filtering
- Time Slot Allocation (TSA)
- Terminal control; terminal monitoring
- Initialization and status block tools

Virtual host/virtual terminal pair – allows host system to control remote terminal.

- Must work as a matched set (Gateway Virtual Terminal [GVT] looks like terminal to host; Gateway Virtual Host [GVH] looks like host to terminal)
- Supports JTIDS voice; Class II (air and ship) terminals; MIDS support currently under test

Network monitor – displays tactical picture. Allows on-line review and collection of tactical data.

Link-11 DTS emulation – allows Link-11 hosts to connect to other DLGWs to pass Link-11 data.



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SYSTEM FEATURES (CONTINUED)

DLGW can emulate or interface to a wide range of JTIDS/MIDS terminal types:

- Gateway Host
 - Airborne Class II
 - F-14D, E-2C
 - Shipboard Class II
 - Class 2H
 - Boeing E-3 Unique Interface
 - USMC Modular Control Equipment (MCE) Interface
 - F-15 Class II
 - Class 2M (future)
 - MIDS (future)
- Gateway Terminal Emulator
 - Airborne Class II
 - F-14D, E-2C
 - Shipboard Class II
 - Class 2H
 - Boeing E-3 Unique Interface
 - USMC MCE Interface
 - Class 2M
 - MIDS
- Data Terminal Emulator (Link-11)
 - Naval Tactical Data System (NTDS)
 - Airborne Tactical Data System (ATDS)

Features available in all DLGW modes of operation:

- User-friendly menu-driven graphical interface
- Data extraction and data reduction
- Data replay (to DLGW network and host system for data extraction)
- Time synchronization
- JTIDS Network Load tools
- Gateway node status
- Geographic situation display (real-time; tracks; PPLIs)

DLGW systems can be specially configured to suit the user's mission requirements, i.e., a single configuration (Shipboard Class II) or multi-configuration (Shipboard Class II, Airborne Class II, and USMC MCE).

Customization items include, but are not limited to:

- Target terminal type
- Target mode(s) of operation
- Target TADIL message capabilities
- Target I/O boards installed

Note: While all platform emulations can be resident on a single machine, only one may be running at a time.

DATA LINK TEST TOOL (DLTT) CUSTOM CONFIGURATIONS

DLTT systems can be flexibly configured, within the limits of the hardware, to accommodate a variety of configurations. Additional configurations include, but are not limited to:

- JTIDS/MIDS terminal support
- Link-11 capability
- Synchronous interface (used for ISDN communications)
- Army Class II M (X.25) capability

Please note that additional emulations are priced separately depending upon the requested emulation and required hardware associated with the emulation.

SYSTEM COMPONENTS/SUPPORT

DLTT systems are configured at Space and Naval Warfare Systems Center, San Diego (SSC San Diego). Modular design and open architecture allow for flexibility and rapid integration of new interfaces and capabilities to suit user needs. The application package includes:

- High-speed computer (Pentium), monitor, keyboard
- Removable hard drive and floppy drive
- Timing board, I/O boards and host terminal interface board
- Operating system software
- DLGW program software

The DLTT Program Office provides full and flexible support services for users, including system configuration, installation, training, ongoing technical support, and upgrade program options.

The DLGW is patented and validated by U.S. test agencies (Joint Interoperability Test Command, Navy Center for Tactical Systems Interoperability).



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FURTHER INFORMATION

Data Link Test Tools are a family of applications developed and maintained by the Space and Naval Warfare Systems Center, San Diego, (SSC San Diego), Code D45, to facilitate TADIL integration and interoperability testing.

Further information on the Data Link Gateway system, other Data Link Test Tools and data link testing facilities/services at SSC San Diego is available at the following:

DLTT Web Site: <http://gateway.spawar.navy.mil>

Send email to: gwinfo@spawar.navy.mil

Telephone (toll free in the U.S.): 1-888-GWLinks (495-4657)

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This technology is related to the subject matter of one or more U.S. patents assigned to the U.S. Government, including patent No. 5,892,765. Licensing inquiries may be directed to: Harvey Fendelman, Office of Patent Counsel D0012, SPAWARSYSCEN SAN DIEGO, 53510 Silvergate Avenue, San Diego CA 92152-5765

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